

ABSTRACT

WOUND HEALING MECHANISM WITH APPLICATION OF WOUND DRESSING COMBINATION OF ZINC OXIDE AND TURMERIC RHIZOME EXTRACT LIQUID (*Curcuma domestica* Val)

Rr. Asti Meizarini

Objective: The wound healing mechanism of the combination of zinc oxide and turmeric rhizome liquid extract has never been studied.

Purpose: The aim of this study is to examine the wound healing mechanism of the combination zinc oxide and turmeric rhizome liquid extract as a wound dressing.

Methods: The activities of anti-inflammation of curcuminoid and eugenol to COX-2 were studied in silico. In a vivo examination was conducted with 33 male Wistar rats in 7 groups. The 1st group was without any intervention. The 2nd until 7th were incised 6x6 mm at vertebral thoracic. The 3rd and 6th were followed by zinc oxide eugenol application. The 4th and the 7th group were followed by zinc oxide and turmeric extract. The 1st – 4th group was sacrificed on the 3rd day, and others on the 7th day. The tissues around the wound excision were removed and used to analyze histopathologically and immunohistochemistry. ANOVA/Kruskal-Wallis was used for the statistics.

Results: In this silico study, the result that had used eugenol was the lowest MolDoc score (-77,821 kcal/mol) and the highest were curcumin (-133,952 kcal/mol) and demethoxy curcumin (-129,791 kcal/mol), indicated that eugenol has a lower anti-inflammation properties than curcuminoid. In vivo examination results, as a dressing, a combination of zinc oxide and turmeric extract which were found to heal much faster ($p < 0,05$), as indicated by lowering the TLR2, NF- κ B, TNF α expression, increasing the FGF2, VEGF, EGF expression, neovascular and the thickness of collagen when compares with another group.

Conclusions: These data indicate that the combination of zinc oxide and turmeric rhizome liquid extract as a wound dressing, has beneficial effects to accelerate the wound healing.

Key words: wound dressing, zinc oxide, turmeric extract liquid, wound healing